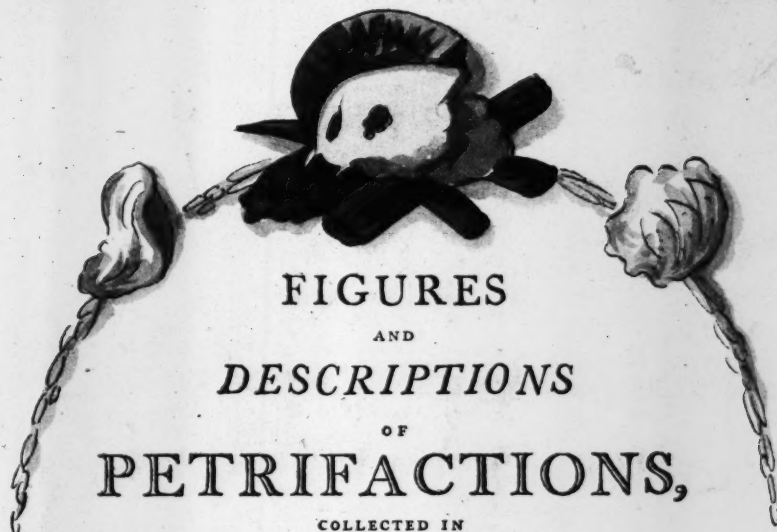


Hardwicke

N^o 1

Plates 1. to 5.

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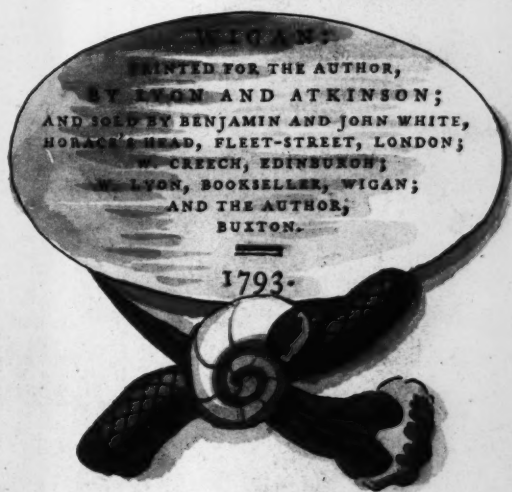


FIGURES
AND
DESCRIPTIONS
OF
PETRIFACTIONS,
COLLECTED IN
DERBYSHIRE.

TO WHICH ARE ADDED,
A Systematical List of the Minerals,
Which have been found constituting the Substance of Extraneous
Fossils in that County;

AND
A BRIEF INTRODUCTION
TO THE
KNOWLEDGE OF PETRIFACTIONS
IN GENERAL.

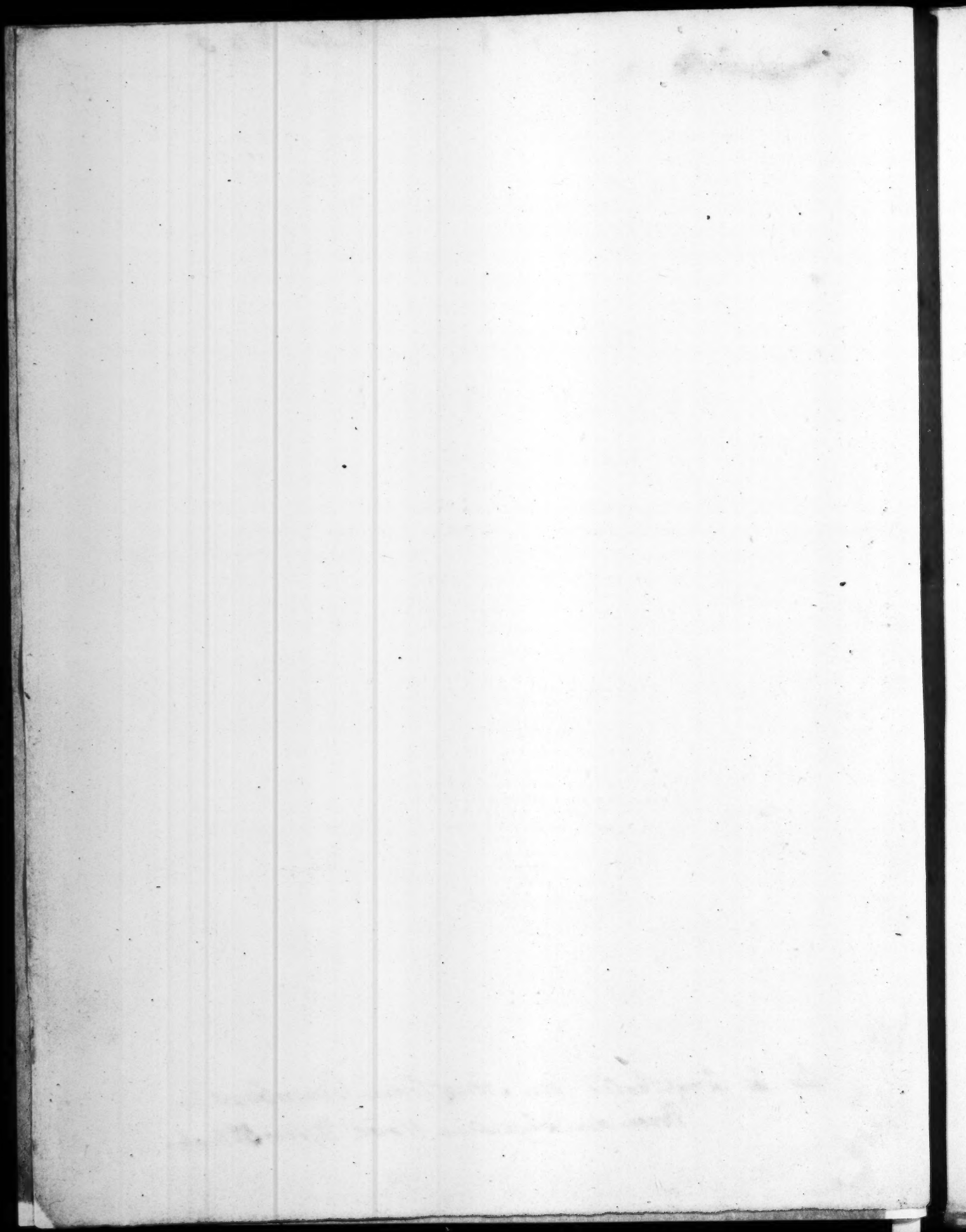
BY
WILLIAM MARTIN.



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1793.

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PREFACE.

THE Plates and Descriptions now offered to the public, formed a *Part* of a general *History of Derbyshire fossils*, in which I was engaged a few years since, in conjunction with Mr. WATSON*, of Bakewell.

Unforeseen circumstances at first retarded, and have, at length, prevented (at least for the present) the publication of the original work. Had this, however, been completed in the manner, which, at the beginning of the undertaking, was proposed, the *Petrifactions* would have been given in a separate volume, distinct from

A

the

* This Gentleman has now in his possession a valuable collection of the *minerals and fossils* of Derbyshire, open to the inspection of the curious.

the other fossils. These, therefore, by the advice of some friends, who do not wish to see the work entirely dropped, I venture to publish, in their *present form*; relying on the candour of those who make the productions of nature their study, for that attention which a more regular work might, with stricter justice, have laid claim to.

The present attempt I believe to be the only one that has been made in England, of giving coloured figures of Petrifications—Abroad it has been done, with a considerable degree of success. It has been objected, that, as the colours of these fossils are not permanent—That is, as the same species is found in various substances, and consequently of various tints, coloured plates can be but of little use in works of this kind. This objection, though it may be just when generally applied, must lose its weight in the present case: the beauty of many of our Derbyshire Petrifications depends upon the minerals which constitute them; and which can scarcely be expressed by plain engravings. They
are

are also more constant, in regard to the substances which compose them, than those of other countries, where the *strata* and their productions are less regular: to this we may add, that colouring cannot hurt the likeness of the *species*, and must always help that of the *specimen*, from which the drawing is made.

As I am not a professed engraver, it may not be improper to mention, that the plates belonging to this work are entirely executed by my own hand. This is no boast. I merely offer it as an apology for their wanting that *neatness*, which proficient in engraving give their work. Accuracy, however, is the principal requisite in figures illustrative of subjects in natural history; and of this, it is hoped, they will not be found destitute.

The drawings and plates already finished will furnish subjects for about twelve numbers—But, as I purpose to continue my researches during their publication, it is probable some new species may occur, which will render another number or two necessary.

necessary. In the mean-time any information, from those gentlemen who have collected the fossils of Derbyshire, relative to the petrifications; or the liberty of making drawings from specimens of such as I have not yet had an opportunity of becoming acquainted with, will be most thankfully acknowledged.

No particular order being followed in this publication, it is necessary to premise, that, in the course of the work will be given *an attempt towards a methodical division of extraneous fossils*, with the discriminating characters at large; and an *index* by which the plates and descriptions may be arranged, if the purchaser thinks proper. For the present, the following sketch may suffice to point out the divisions to which the species belong.

TABULA

TABULÆ SYNOPTICÆ PETRIFICATORUM.

EXTRANEOUS Fossils arrange under two general divisions or classes—The *first class* comprises the petrifications of the more early ages, the originals of which existed prior to the formation of the *Strata*, which now compose the upper part of our globe—The *second*, the more recent petrifications, the originals of which existed since the formation of the present *Strata*.

PETRIFICATA.

CLASS I. PRIMARIA.

Primary petrifications, or those of the old world.

ORDER I. ANIMALIA.

Derive their form from *perfect* animals.

- GENUS 1. Zoolithus.
2. Ornitholithus.
3. Amphibiolithus.
4. Ichthyolithus.
5. Entomolithus.

ORDER II. HELMINTHOLITHA.

Derive their form from *imperfect* † animals or worms.

- | | |
|---------------------|---|
| 6. Zoophytolithus. | } For the further
arrangement
of these gen-
era see the
next table. |
| 7. Echinites. | |
| 8. Conchyliolithus. | |
| 9. Corallites. | |

ORDER III. PHYTOLITHA.

Derive their form from vegetables.

10. Carpolithus.
11. Lithophyllum.
12. Lithoxylon.
13. Rhizolithus.

CLASS II. SECUNDARIA.

Secondary petrifications, or those of the new world.

ORDER I. INTERNA.

Have the *internal* form or structure of organic bodies.

- GENUS 14. Solidum.

ORDER II. SUPERFICIARIA.

Have the *external* form or shape of organic bodies.

15. Crusta.
16. Figura.

ORDER III. IMPERFECTA.

Are organic bodies merely mixt or impregnated with mineral matter.

17. Mumia.
18. Humus*.

* It may appear strange to some, that we should place the *Humi*, or *Moulds*, among the petrifications. In this we follow the celebrated CRONSTEDT.—Indeed, it is evident, they cannot be considered as *native fossils*, so long as they retain vestiges of their animal, or vegetable origin

† Having no known *sense* in common with those of other animals, but that of *feeling*. Since nature however has given to the *vermes* all those organs necessary to their existence and mode of life; they may, without doubt, be justly esteemed as *perfect* in their *kind* as other animals; though that *kind* be an inferior one. Why, therefore, the fossils, to which they have imparted their form, are separated from the other animal remains, will require an explanation. In the *Linnaean* system, the *vermes* form the sixth class of animated nature; and, according to the rule of throwing the classes into genera, which is observed in the first order of this arrangement, they should here make a sixth genus of the first order. It must be well known however to those who are acquainted with petrifications, that the first five classes of animals, *viz.* *Mammalia*, *Aves*, *Amphibia*, *Pisces*, and *Insecta*, are generally found so mutilated and deficient in a fossil state, that rarely any further distinction can be made than, that they are the remains of quadrupeds, fishes, &c. But in the fossil worms, it is not only easy to determine the *kind*, but even, in many instances, the *species* of shell, coral, or zoophyte, which comes under inspection. It was, therefore, thought more eligible to make these a distinct order; as it gives a better opportunity of bringing their arrangement nearer to that, which Linné has established in the recent animals; and, consequently, of referring with greater accuracy each particular species to its original, where known.

ORDER II. HELMINTHOLITHA.

6. ZOOPHITOLITHUS.

* Without stems.

1. Z. Asteriæ.

* * Furnished with stems.

2. Entrochus.

3. Encrinus.

4. Caryophyllites

} Isides. Syst. Nat. p. 1287.

7. ECHINITES.

* Shells or coverings.

1. E. subglobosus.

2. E. pileatus.

3. E. galeatus.

4. E. cordatus.

5. E. placentatus.

* * Spines and other parts of Echini.

6. Lapis judaicus.

7. Dens echini fossilis.

8. CONCHYLIO LITHUS.

* Multivalves.

1. C. Lepadis.

2. C. Pholadis.

* * Bivalves.

—————always open, or gaping in some part—
Valves equal.

3. C. Veneris.

4. C. Myæ.

5. C. Solenis.

6. C. Pinnæ.

—————shut close—Valves equal.

—————-inarticulate.

7. C. Mytili.

8. C. Margaritiferæ.

—————-articulate, or
set with a few teeth.

9. C. Tellinæ.

10. C. Cardii.

—————-multarticulate.

11. C. Arcæ.

—————shut close—Valves unequal.

12. C. Anomiæ.

13. C. Ostræ.

14. C. Pectinis.

15. C. Spondyli.

* * * Univalves.

—————concamerated, or chambered.

16. Belemnites.

17. Orthoceratites. (Con. Nautili recti.)

18. Ammonites. (Con. Nau. spiris manifestis.)

19. C. Nautili. (i. e. Con. Nau. spiris reconditis.)

—————involute.

20. C. Argonautæ.

21. C. Bullæ.

22. C. Cypræ.

—————turbinate, or spiral.

—————-with the mouth
either notched, or ending in a gutter.

23. C. Buccini.

24. C. Strombi.

25. C. Muricis.

26. C. Volutæ.

—————-with the mouth
whole, neither notched nor guttered.

27. C. Coni.

28. C. Trochi.

29. C. Turbinis.

30. C. Helicis.

31. C. Cochleæ. (Hel. rotundata. Syst. Nat. p. 1243, & 1246.)

32. C. Neritæ.

33. C. Haliotidis.

—————simple, without any regular spires.

34. C. Patellæ.

35. C. Dentalii.

36. C. Serpulæ.

9. CORALLITES.

* Solid.

1. Cor. Isidis,

2. Cor. Gorgoniæ. } Zoophyta. Syst. Nat. p. 1287.

* * Cellular.

—————the originals of which were calcareous
and stony.

3. Cor. Tubiporæ.

4. Cor. Madreporæ.

5. Cor. Milleporæ.

6. Cor. Celleporæ.

} Lithophyta. Syst. Nat. p. 1270.

—————the originals of which were membranous,
or fibrous.

7. Cor. Flustræ.

8. Cor. Tubulariæ.

9. Cor. Corallinæ.

10. Cor. Sertulariæ.

} Zoophyta. Syst. Nat. p. 1300.

1



PLATE I*.

PETRIFIED WOOD.

SOLIDUM (*silicis*) siliceum ligni texturam habens.

Linn. Syst. Nat. Tom. III. p. 171. n. 4. *Phitolithus Lythoxilon*. (2 3.)—Mus. Tess. p. 102. Tab. 7. f. 1. *Lithoxy. achatinum*. & p. 102. Tab. 8. f. 1. *Lithoxy. silicinum*.—Grew. Mus. p. 269.

This species is not very common in Derbyshire; but some good specimens have, now and then, been met with in the water-courses, belonging to our lead-mines, &c. That, from which the figure in the adjoining plate is taken, was sawn from a large trunk-like body, found some years ago, in an old water-course, near Bakewell. It is evident, on the slightest inspection, that the original was wood. It was, in all probability, one of the props, which were placed to support the roof of the course. No part of the wood however remains: the substance throughout is *chert* †; though in texture, and nearly in colour, it resembles the body, which it has displaced. The chert is of two kinds; the one coarse, brown, and opaque; the other finer and, in a

B

* The figures, in each plate, are of the size of the specimens, from which they were drawn, except where the contrary is noted.

† Siliceous earth united to argillaceous and a small quantity of calcareous earth. *Petrosilex*. Cronstedt's Min. 63.—Withering's Outlines of Min. § 129.—Linn. Syst. Nat. Tom. III. p. 70. n. 11.

Some Mineralogists have considered siliceous petrifications as rare: Bergman says they are sometimes met with; but, in general, this material forms only nuclei. In Derbyshire however, this is not the case: here chert, which ranks under the siliceous earths, frequently constitutes the substance not only of secondary petrifications, as in the present specimen, but also of primary petrifications, or those of the first class.

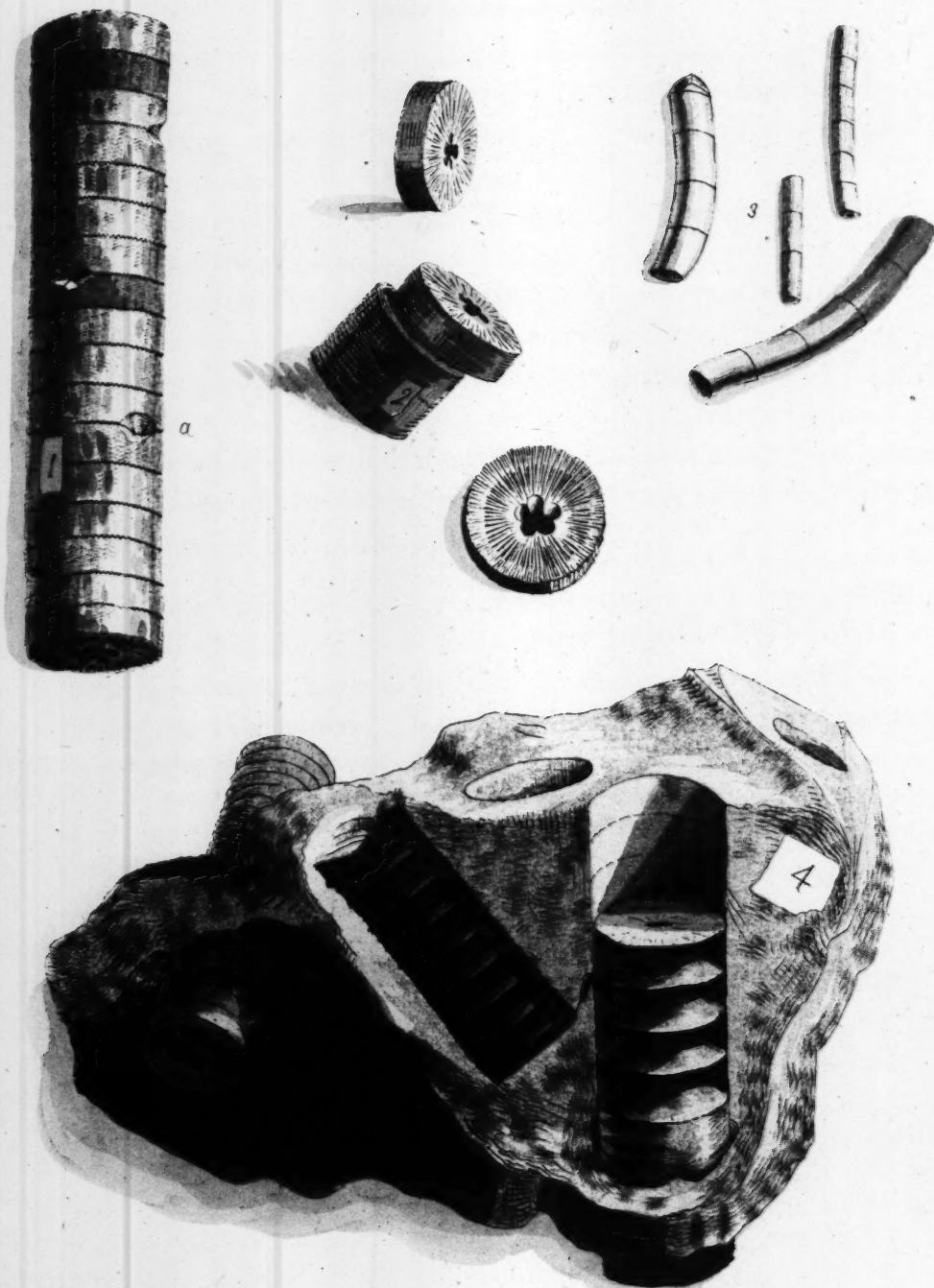
PLATE I.

small degree, transparent. The first forms the principal part of the specimen. The other, which is of a light colour, nearly white in some places, appears to have insinuated itself through the coarser texture of the first; and to have filled those parts which were left void, probably by a partial removal of the ligneous matter, before the chert began to take its place. The face of the specimen, which is polished, has a radiated appearance, exactly similar to what is exhibited by a transverse section of a trunk of oak. The annual rings, as they are generally called, are also distinctly marked. That part, which was the heart or center of the wood, lies toward one side of the specimen, which is nearly triangular; two thirds of the circle, that it would otherwise have formed, being broken off in the sawing.

This is by far the best specimen of petrified wood, which I have seen, of those collected in this county; many of which have been very imperfect: in this, the concentric circles, the radial insertions, and the general structure of the whole fossil, leave no room to doubt its origin.

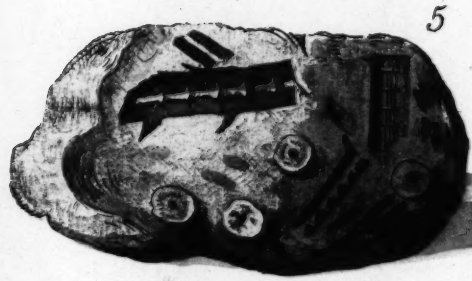
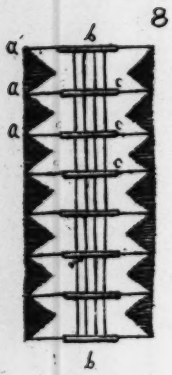


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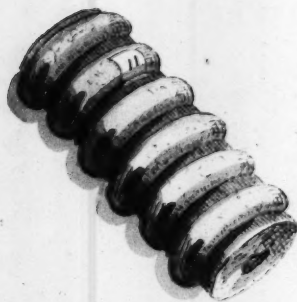


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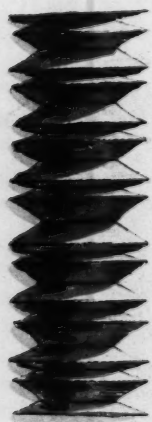
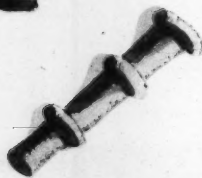




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PLATE 2, 3, 4.

VARIOUS SPECIMENS OF ENTROCHI, OR SCREW-STONES.

ENTROCHI are found in great abundance, in several parts of Derbyshire; and in a variety of *forms*; but the *species* are not so numerous, as at first sight they appear to be. On a careful examination we often find many extraneous fossils, differing considerably in shape, to be *specifically* the same—This is particularly exemplified in the Entrochus: its structure, which is complicated, when compared with that of shells and other exuviae, and the imperfect state, in which it is commonly found, giving each species a diversity of figure. I have endeavoured here, and in other parts of the work, where the Entrochi are described, to reduce these varieties to their proper species. This would have been done, perhaps with greater accuracy, had I been more successful in my search after perfect specimens.

FIG. 1. 2. 3. 4. 5. 6. 7. 8.

ZOOPHYTOLITHUS ENTROCHUS (*lævis*) stipite articulis æqualibus: oris lævibus planis.

Helminthol. Entrochus. Linn. Syst. Nat. Tom. III. p. 168. n. 17. lævis.—*Berken. Synop. Nat. Hist. p. 273. n. 8.*—*Entrochus. Morton's Northamp. p. 241. Sect. 113. n. 1. 2. & 242. n. 4. Tab. 10. f. 21, 22.*—*Hook's Post. Works. p. 285. Tab. 5. f. 4. 5. 6. 14.*—*Woodward's Cat. Eng. Foss. Vol. I. Part II. p. 78. n. k. 1.-----k. 74. & Vol. II. p. 48. C. 30. C. 32. & Foreigner Cat. Part II. p. 13. n. 1.-----7.*—*Leigh. Hist. Lancash. Tab. 1. f. 1. 2.*—*Hill's Hist. Foss. p. 653. Tab. 12.*—*Whitehurst. p. 240. Plate VII.*—*Pilkinton's View of Derbysh. Vol. I. p. 198.*—*Stelentrochite, p. 270. Astentrochite, p. 271. Syntrochite, Trochites. p. 272. Grew's Mus.*

Even, smooth, and cylindrical; composed, like its congeners, of round, flat joints; and, when perfect, furnished at equal distances, with small lateral arms, or branches. It is perforated

PLATE 2, 3, 4.

longitudinally, through the center; the perforation generally pentagonal. The joints are equal; their *disks* or flats, by which they are connected, striated from the center to the margin. The *striae* of each articulation tally with those of the next, to which it is joined; slight, serrated lines being formed by their extremities, which circle the stem, and mark out the several commissures. The edge of the joint, or that part, which constitutes the outside of the Entrochus, is plain, or nowise convex.

This is the most common species. It is found, more or less, in all our lime-stone; but particularly in the second and third *stratum*, which, near Buxton, Ashford, and elsewhere, appear to be, in some places, almost wholly composed of fragments of this and other Entrochi.

FIG. 1. The common, smooth Entrochus, in the most perfect form we find it in Derbyshire. It varies in its thickness, from that of a packthread to an inch and an half, or more, in diameter.

2. *St. Cuthbert's*, or *Guthbert's beads*. Joints broken from the above. It is observable, that the joints are longer, in proportion to the decrease of their diameters: in Entrochi, no thicker than a quill, the articulations are generally half an inch long; but sixteen, or eighteen joints do not often exceed an inch, in specimens near two inches in diameter.

3. Fragments of the arms, or lateral branches. These are rarely found adhering to the main stem. The places, in which they were inserted, are marked in most specimens, by a kind of angular concavity, or depression; as at *a*, fig. 1.

PLATE 2, 3, 4.

FIG. 4. The common Entrochus, when the outer coat is worn away. Generally found in cylindrical cavities, as expressed in the figure. The matrix of this is frequently chert.

5. 6. Small tubular bodies, which are connected by transverse plates, and form the central part of the Entrochus. They probably serve as a kind of ligament, in the recent animal, by which the joints are united. They are found, thus divested, in cavities, made by the removal of the exterior parts of the Entrochus. I have seen specimens in which this removal has but partially taken place. In these the central part and matrix were chert; the outer coat and parts which form the screw-stones, spar or lime-stone.

7. A specimen of the common, Derbyshire marble; in which the figures are produced by different sections of Entrochi.

8. A perpendicular section of an Entrochus, in order to shew the internal construction, or the disposition of the parts, above described. *a. a. a.* point out the different commissures; *b. b.* the ligament, which runs through the center of the joints; *c. c. c.* the transverse plates, by which the small, cylindric bodies, that form the ligament, are connected. The white parts of the figure shew the screw-stone; the brown, the outer coat, or what fills up the interstices of the screw-stone, and constitutes the edge of each joint.

FIG. 9.

ZOOPHYTOLITHUS ENTROCHUS (*prominens*) stipite
articulis æqualibus: oris prominentibus lævibus.

Linn. Syst. Nat. Tom. III. p. 168. n. 17. Helminthol. Entrochus---articulis elevati
lævibus.—Hook. Post. Works. Tab. 5. f. 3.

C

PLATE 2, 3, 4.

Joints equal; their edges prominent, or convex. Resembles the common species in other particulars. Found with the above.

FIG. 10.

ZOOPHYTOLITHUS ENTROCHUS (*verrucosus*) stipite
articulis æqualibus: oris prominentibus verrucosis.

Linn. Syst. Nat. Tom. III. p. 168. n. 17. Helminthol. Entrochus---verrucosus.—
Mus. Tes. p. 96. n. 15. Helminthol. reptilis---Entrochus transversim sulcatus verru-
cosus.—Grew. Mus. p. 270. "a round one, &c."

Differs in nothing, from the species last described, but in having the edges of the joints studded, with a single row of small protuberances, or wart-like bodies.

This is not common; I have met with a few imperfect specimens about Buxton; that, from which the figure was taken, was found near Ashford.

FIG. 11. 12. 13.

ZOOPHYTOLITHUS ENTROCHUS (*inæqualis*) stipite
articulis inæqualibus: oris lævibus, alternis prominentibus.

Hook. Post. Works. Tab. 5. f. 7. Grew. Mus. p. 27. "a seventh---&c."

Joints unequal, smooth; one thick, with the edge very prominent and convex; the next thin, with the edge flattened, or not prominent—so alternately.

Found with the other species; but rare.

FIG. 12. Differs in having the thin joints prominent, and the thick plain, or flatted. It appears, however, to be only a variety of this species: perhaps the remains of the arms, or branches.

13. The screw-stone, which this species forms, when the outer coat is destroyed.

PLATE 5.

A CAT'S HEAD INCRUSTED WITH CALCAREOUS EARTH.

FIG. 1. 2.

CRUSTA (*calcaria*) calcis aeratæ ossa, ligna, plantas muscosve obducens.

This species is frequent in Derbyshire. Incrusted bones, moss, &c. are common, in all those streams and rivulets which run over lime-stone. They are also found in the hard, stony *Tophus*, which is continually forming on the banks of the river, near Matlock and elsewhere, by the precipitation of the calcareous earth, with which most of the running waters, in this county, abound.

Calcareous incrustations, though we consider them as forming but one species, may be divided into three varieties, according to the bodies covered; viz. 1. Bones. 2. Wood. 3. Plants*.

A curious specimen of the first variety is exhibited in the fifth plate. It was found, as I am informed, near Bakewell, in making a *level*, for the purpose of carrying off the water from a neighbouring lead-mine. The men, who were employed in the work, followed from the beginning a small natural fissure, which was at the bottom of the hill, where the mine was situate, and in a direction similar to that of their intended *level*. They

* To the first of these might be referred, with propriety, many of the fossil bones of land animals, which have been described by various authors;—Such as the *Zoolithus Hominis*, *Cervi*, and *Ornitholithus totalis*, &c. of LINNE—For, as Dr. CAMPER justly remarks (In the Philosophical Transactions, for the year 1786. p. 451.) no human bones, and of birds (we may add, also, of quadrupeds) but very few, have been hitherto found in a petrified state, and belonging to the old world.

PLATE 5.

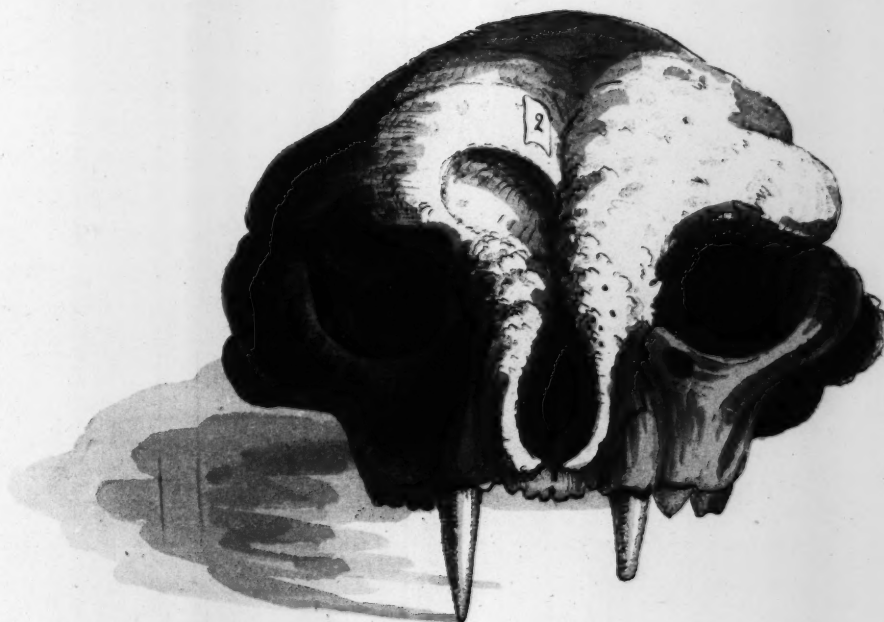
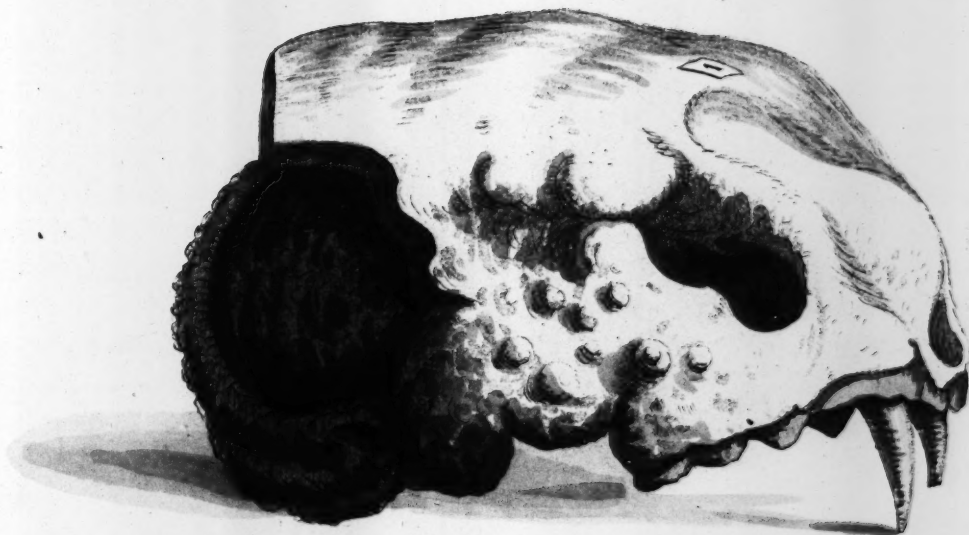
had proceeded some yards, when they came to a kind of *fault*, or sudden drop of the rock, several yards deep; into which they descended; and discovered, in the bottom, the incrustated skeletons of two animals, apparently of the feline tribe. They were, I believe, pretty perfect, when first found; but, through the negligence of the miners, soon after broken, and in a great measure destroyed. The head, now figured, is in Mr. Watson's possession. The incrustation is of a light yellow, or buff-colour; and of a firm, stony texture. It does not cover every part; the teeth and one side of the upper jaw being bare. The grinders are perfect; the fore-teeth lost. The canine teeth are very large and strong; the enamel still on them.

Some gentlemen, to whom this specimen has been shewn, have thought the skull too large for that of a cat; but the form and number of teeth incontestably prove it to have been such. Besides, the wild cat was, at one time, found in Derbyshire; and this animal, according to Mr. PENNANT and other Zoologists, is much larger than the common domestic cat *.

I know no other way to account for the skeletons being in the situation above described, than by supposing that the animals, to which they belonged, at first sheltered themselves, from pursuit, in the outward hole, or fissure; from which, being still pursued perhaps, they were forced into the pit, or cavern; and there, not being able to free themselves, perished.

* Some Wild-Cats have been taken in this kingdom of a most enormous size. We recollect one having been killed in the county of Cumberland, which measured from its nose to the end of the tail, upwards of five feet. *History of Quadrupeds, with wood-cuts by T. Bewick. Printed at Newcastle.*

5



Genl Hardwicke

Nº 2

Plates 6 to 10

6

1

2

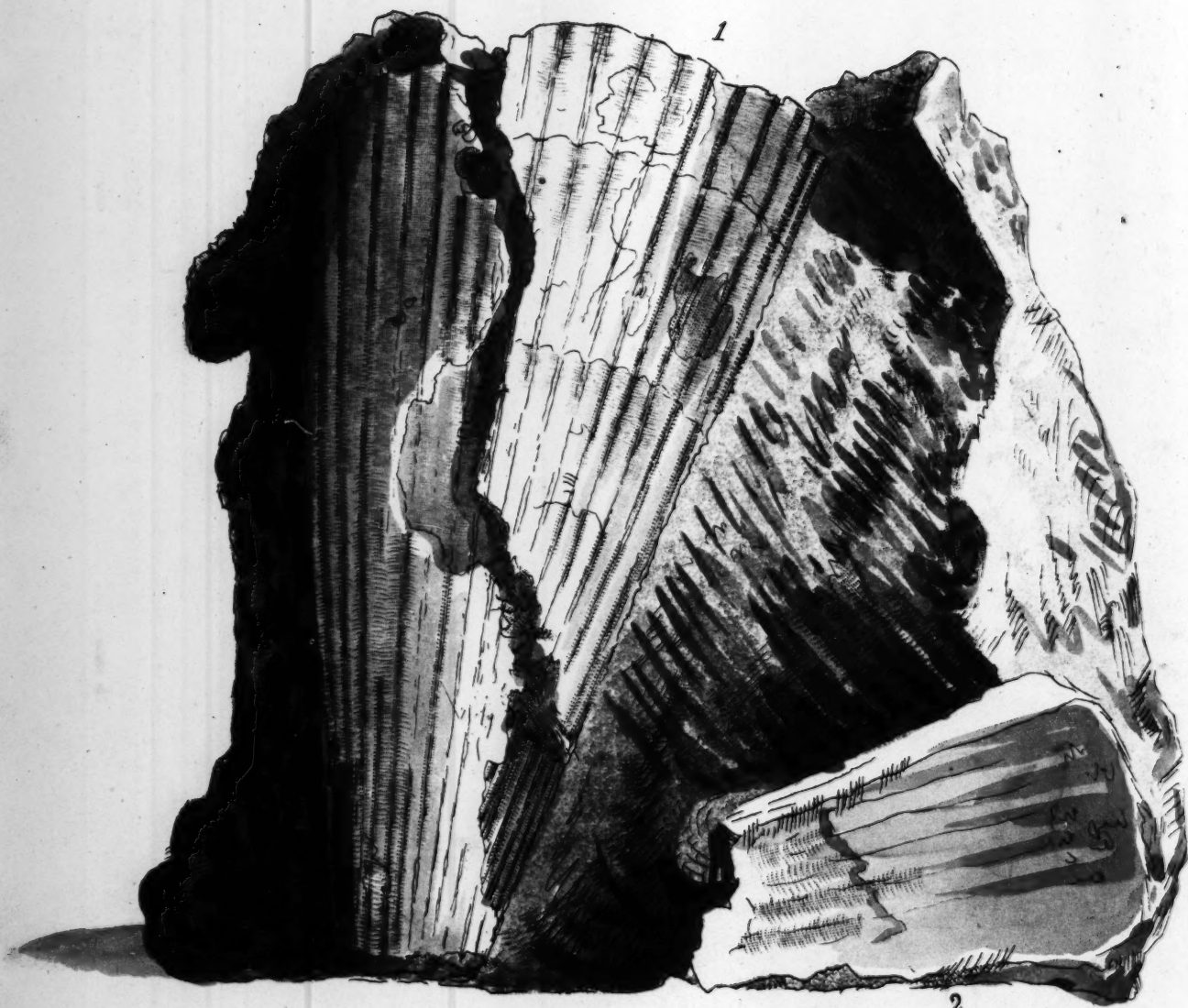


PLATE 6.

CASTS OF THE SEA-WING, A BIVALVE SHELL, IN LIME-STONE.

FIG. 1. 2.

CONCHYLIOLITHUS (*nobilis*) PINNÆ testa striata,
squamis canaliculato-tubulosis subimbricatis.

Linn. Syst. Nat. Tom. II. p. 1160. n. 265. Pinna nobilis—Morton's *Northamp.*
p. 198. n. 3. Pinnites albus rugosus—*Mus. Tess. p. 92.*

A fossil, bivalve shell, of the genus *Pinna*, conical, compressed; beaks pointed; opposite extremity very broad, rounded; surface rough, and deeply striated in a longitudinal direction; the *striæ* distant.

This species is not frequently to be met with; I found some specimens, near Buxton, last summer; but they were very imperfect. The annexed plate exhibits two pieces, in a large lump of lime-stone. The figure is only one third the size of the original, which is now in Mr. Watson's collection, at Bakewell.

The sea-wing, which is the name the recent shell is known by, is a native of the mediterranean. It is a very large species; often two feet long, and near one foot in breadth, at the larger end. The surface is rough and imbricated, with a kind of *squamæ*, or scales, many of which terminate in a tubular form. The fragments I have figured, were formed, apparently, as casts are in moulds, on the inside of the recent subjects; and are consequently destitute of the *squamæ*, &c. with which the shell itself is furnished.

PLATE 6.



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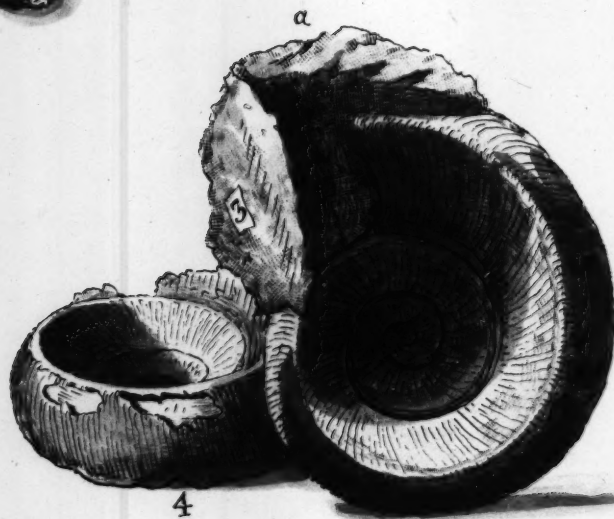


PLATE 7.

DIFFERENT SPECIMENS OF UNIVALVE SHELLS IN LIME-STONE.

FIG. 1.

CONCHYLIOLITHUS (*angulatus*) TROCHI testa imperforata conica, anfractibus carina acuta, margine superiore catena punctiuncularum oblongarum notata.

A fossil shell of the genus *Trochus*, conical; volutions about five, carinated, or rising, towards the lower part of each whirl, into a sharp angular ridge; on the upper margin of which runs a narrow line of small, transverse, oblong punctures, disposed in pairs, and connected by others, which are placed in a contrary direction; so that the whole resembles a kind of chain-work.

Found near Middleton. Rare.

This and the two succeeding species are perfect petrifications; that is, they are not merely casts, but stones which have received the full figure, with the external markings of the originals.

FIG. 2.

CONCHYLIOLITHUS (*vittatus*) TROCHI testa imperforata conica, striis longitudinalibus obliquis, anfractibus basi tæniolam complanatam habentibus.

A fossil shell, of the genus *Trochus*, conical; volutions five; their sides flat, striated; the *striae* cross the volutions in an oblique direction; they are small, equal, close, and parallel; they do not cover every part; a narrow space being left bare at

PLATE 7.

the base of each turn, which circles the shell like a spiral band or fillet.

From Bakewell.

FIG. 3, 4.

CONCHYLIO LITHUS (*catillus*) HELICIS testa depressa, subtus plana, supra concava striata, dorso convexo utrimque marginato, transversim striato.

A fossil shell, of the genus *Helix*, depressed; beneath plane or flat, above concave, striated; the *striae* are transverse, in regard to the wreaths, crossing them somewhat obliquely. The volutions are about three, marked on the upper side by a narrow border or fillet, which runs on the inner part of each turn. The back of the first or outward whirl is broad, convex, and transversely striated, bordered on either side with a sharp edge or margin.

This species is pretty frequent. I have met with it near Tideswell, Winsters, and other places; but seldom in any great degree of perfection. It might at first sight be taken for a *Cornu amonis*; it is, however, entirely destitute of the concamerated or chambered structure, which characterizes that kind of shell.

Mr. Walcott has given, in his Bath Petrifications, a figure (56) which nearly resembles this species, except in not being striated. It is probably a cast from a shell of this kind. In my specimen, the shell itself has been changed, and remains on the

PLATE 7.

cast, which would otherwise be perfectly smooth, as may be seen in those parts where the surface is broken.

Fig. 3. A full view of the concave or dished side. This, it is proper to remark, is smaller and more contracted than the under and flat side; hence when viewed full, as in this figure, the upper margin appears to form a sharp ridge, near the center of the first volution.

4. The same specimen in a different position, to shew the back.

FIG. 5, 6.

CONCHYLIO LITHUS (*striatus*) COCHLEÆ testa ovato-conica transversim striata, rima umbilicali, apertura subrotunda.

A fossil shell, of the genus *Cochlea*, conical, but not regularly so, the body whirl being large and rounded at the base. Volutions five, ventricose or bellied, striated; the *striae* parallel with the turns; aperture somewhat dilated, subrotund. An umbilical mark or furrow (*rima umbilicalis*) runs between the mouth and first whirl.

From Castleton. Seldom found perfect.

FIG. 5. An imperfect specimen; the upper volutions broken off. It is in a brown, soft kind of lime-stone, and retains the

PLATE 7.

external markings of the original, which are seldom found in harder stone.

6. A cast in the harder lime-stone, smooth and polished. This more common than the last.





8

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Drawn and Etched
from Nature
by W. Martin 1789.
Ruston, Derbyshire.

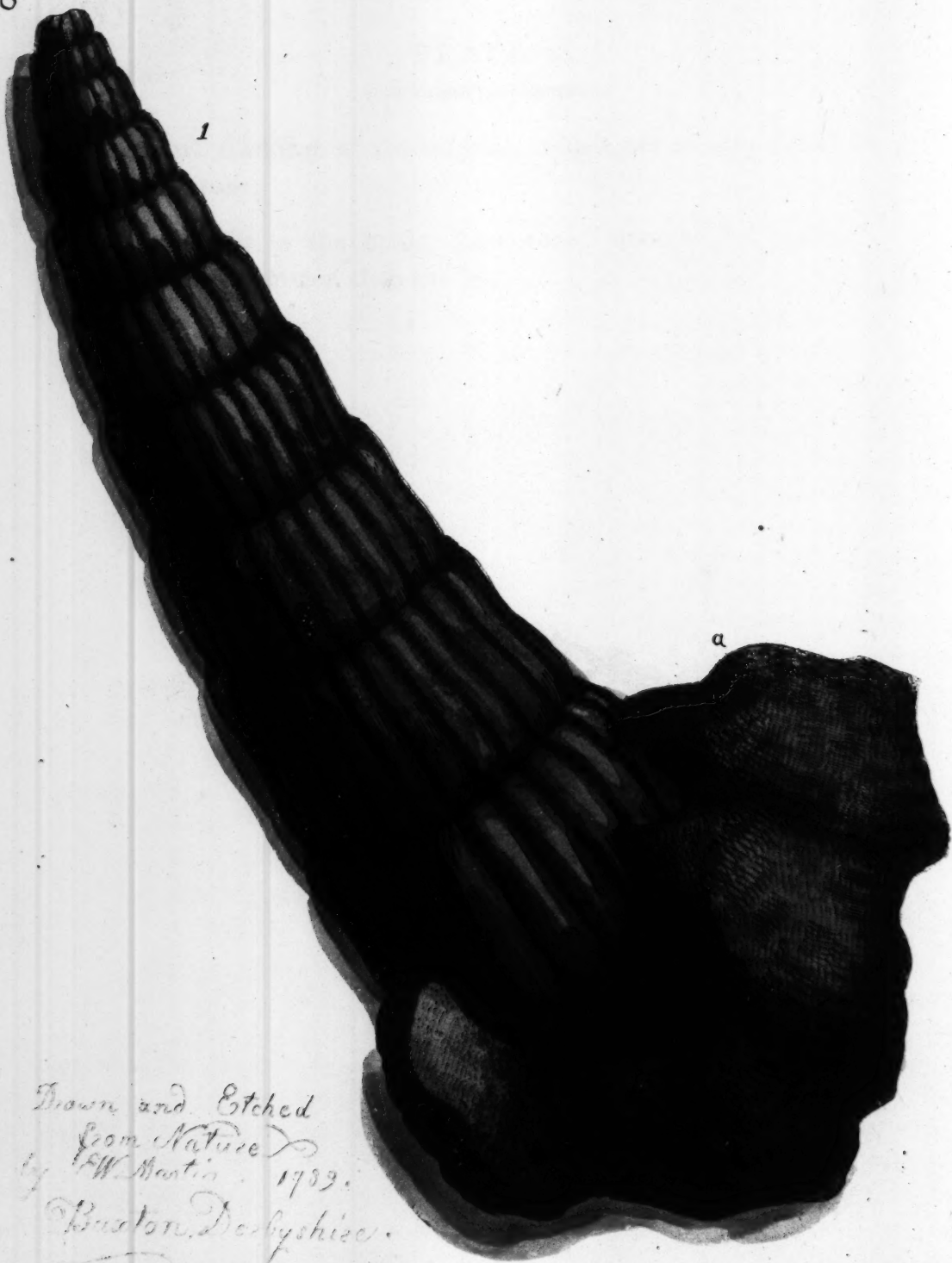






PLATE 8, 9.

FRAGMENTS OF VEGETABLES, IN SHALE AND ARGILLACEOUS GRIT-STONE.

FIG. 1, 2.

LITHOXYLON (*sulcatum*) simplex, teres, cylindraceum (versus apicem conicum) articulatum: articulis longitudinaliter sulcatis.

A petrified trunk or stem, simple or nowise branched; round, cylindrical, except towards the top, where it gradually takes a conic form; jointed; joints equal, till they approach the apex, then regularly diminished; sulcated or furrowed longitudinally; the *sulci* broad and equal.

This fossil is very common in Derbyshire: it is found, more or less, in all the upper *strata*, productive of coal, particularly near Wingerworth, Chesterfield, Alfreton, &c. It lies in various directions between the *lamine* of the stone and coal; is found from one to three or four inches in diameter; and may sometimes be traced to the length of three or four feet; though it is seldom, that more than a few inches can be got perfect, from the surrounding substance. This, as well as the two succeeding species, have only the external form of their originals: when broken into, they exhibit no traces of an organic structure, nor any other appearance than that of the stone, shale, or coal, in which they were lodged.

It will perhaps be difficult for the most experienced Botanist to ascertain precisely the species of vegetable, to which this

PLATE 8, 9.

fossil owes its form—Mr. Whitehurst, in his account of the Derbyshire *strata*, notices it as the remains of the *Indian Bamboo*. The original is probably a species of the *Arundo* or cane; but it does not agree with any specimen, which I have had an opportunity of seeing.

FIG. 1. The conical part, or top, in grit-stone. It is somewhat compressed, as all organic remains are, more or less, in lamellar substances—Where the grit-stone has not a lamellated structure, or where the *laminae* are increased in thickness, which they generally are in proportion to the depth the stone lies in the quarry, it is found perfectly round. *a. a.* A piece of the stone in which the specimen was lodged.

2. A specimen of the lower part of the stem, very much compressed, in shale or shiver (*Schistus friabilis*) a kind of black slate, of a loose lammellated texture, generally accompanying coal.

FIG. 3.

RIZOLITHUS (*compressus*) simplex cylindricus compressus, longitudinaliter rugatus.

A fossil root, simple or continued without any lateral branchings; cylindric and compressed; wrinkled longitudinally. The compressed form appears to have been the natural figure of the original; for the succeeding species is found in the same stone perfectly round.

Frequent with the above. In grit-stone.

PLATE 8, 9.

FIG. 4, 5.

RIZOLITHUS (*corticossus*) cylindraceus teres, transversim rugatus, cortice crassa æqua abductus.

A fossil root, consisting of an inner part, which is cylindric, round, and transversely wrinkled; and an outer bark or covering, very thick and smooth, or not wrinkled. The inner part is sometimes found divested of its exterior coat or bark.

These roots are frequent with the *Lythoxylon sulcatum* described above; and one of them probably belonged, in a recent state, to the original of that fossil; but, as they are always found detached, this remains uncertain.

FIG. 4. A specimen with the outer coat nearly broken away.

5. With the coat or bark remaining on one side. *a.* the inner, wrinkled part. *b. b.* the outer coat. *c. c.* part of the stone in which it was lodged. I found these specimens (Fig. 3, 4, 5.) with some others, in a small quarry between Buxton and Leek, on the right hand of the road, and a little before the turnpike belonging to the last mentioned place. The quarry is situated in Staffordshire; but I made choice of them for drawing, as they were more perfect than those which I had collected in this county.

PLATE 8, 9.



10



PLATE 10.

IMPRESSIONS OF FERN, IN IRON-STONE.

FIG. 1, 2, 3, 4.

LITHOPHYLLUM (*striatum*) **FILICIS** frondibus pinnatis: pinnis pinnatifidis, lobis lanceolatis integerrimis alternis, confertim transverse striatis.

A fossil leaf of fern, winged; the wings alternate, distant, divided, almost to the middle rib, into a number of long, narrow, pointed lobes or segments, disposed in an alternate order, entire on the edges, and transversely striated; the *striae* are numerous, very close, and divided into two series, as it were by an indented rib or vein, which runs down the center of each lobe.

Found near Chesterfield and Alfreton. It is sometimes met with in the coal-shale; but more frequently, and in better preservation, in the nodules of iron-stone, abounding in the *way-boards*, or thin beds of indurated clay which generally separate the different *strata* of coal and grit-stone. The whole leaf is very large, and rarely found entire; for as the nodules are but small, they seldom contain more than one of the *pinnae*, or lateral wings, of which the leaf is composed.

There is no British fern which exactly agrees with this fossil; the *pinnae* somewhat resemble in figure the *common polypodes* (*Polypodium vulgare*. Linn. *Species plantarum*, p. 1554—*Flora Danica*, Tab. 1080—Bolton's *Filices Britannicae*, Tab. 18) as also the barren leaves of the *Osmunda Spicant*, (Linn. *Sp. Plant.* p. 1522—*Flora Dan.* Tab. 217—Bolton's *Fil. Brit.* Tab. 6) but the thick and

PLATE 10.

striated appearance of the lobes, and other particulars, evidently prove it to have been a species distinct from both these plants. Woodward and some other authors have described a fossil nearly resembling this *Lythophyllum*, the original of which they suppose to be an American fern—it is probably such; but I am not certain if the recent species be known; or that it has been particularly pointed out, by any of our English writers on these subjects.

FIG. 1. A nodule of iron-stone, with the impression of a single *pinna* or wing.

2. A smaller nodule, with a similar impression.
3. A single lobe or segment, detached from the wing.
4. A part of the main leaf-stalk, from which the wings or lateral leaves, in the nodules 1 and 2 originally sprung.

Number 3^d - Plates 15 to 16

M. Gen^l Hardwicke



11



W. Martin. 1789.







13

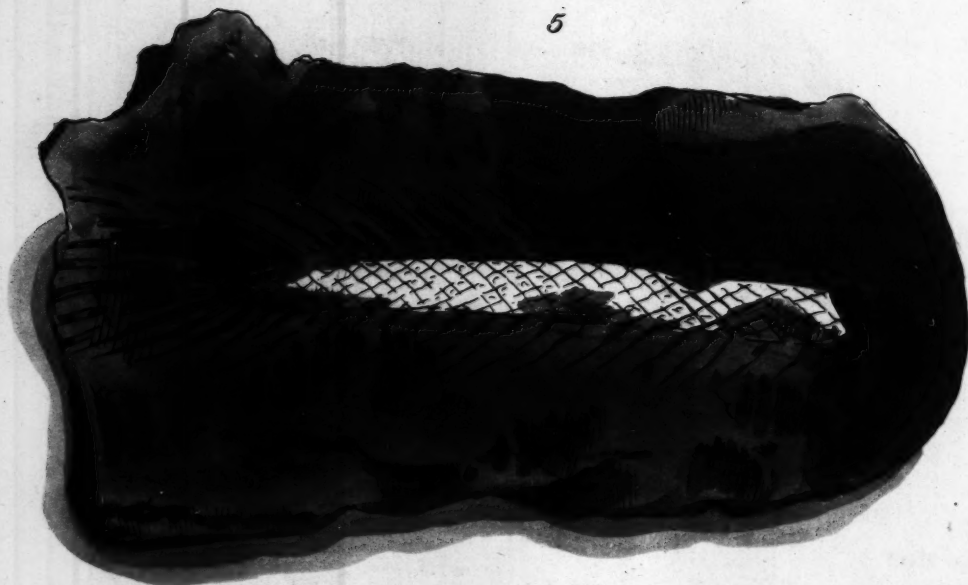
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PLATE II, 12, 13, 14.

VEGETABLE REMAINS IN GRIT AND IRON-STONE.

FIG. 1, 2, 3.

LITHOXYLON (*verrucosum*) simplex subrotundum, tectum tuberculis suppressis, sulco longitudinali ad latus compressum.

A fossil stem or trunk, simple or not branched, subrotund or of a figure approaching to roundish, but slightly flattened on one side; set round with tubercles, disposed in form of a quincunx, or as the checks upon a chess-board: the tubercles suppressed or sunk into hollows, so that their tops scarcely protrude above the surface. On the compressed side of the trunk a deep longitudinal *sulcus*; immediately under which, and in a similar direction, runs a rough imbricated body of a cylindric figure, its diameter about one sixth of that of the stem itself.

Common in those parts of Derbyshire where coal and iron-stone are found: it is particularly frequent in a hard kind of silicious grit, called *crow-stone* by the miners—This is of a much firmer texture and lighter colour than the other grits; strikes fire with steel; and is principally used in the repair of roads. The petrifications lie imbedded in the solid parts of the stone, and are generally covered with a black, or dark brown, ferrugineous crust: when this is broken through, the substance of the petrification is found to be the same as the surrounding grit.

PLATE 11, 12, 13, 14.

The common thickness of this petrification is about that of a man's arm; but is sometimes met with of four or five times that size. The largest specimen, I have seen, did not exceed three feet in length; but both ends were broken; nor have I, as yet, been able to learn in what manner they terminate; though the same specimen has been traced, as I am informed, some yards, in the stone above mentioned.

I believe the vegetable, which has furnished this fossil, is not known: it appears to belong to the genus of *Cactus*; but does not, I think, agree with any of the species yet discovered; though indeed the mutilated state, in which the fossil is found, precludes the possibility of determining this point. This is the same fossil Mr. Whitehurst mentions in his "*Inquiry into the original state and formation of the earth*," p. 203, as the remains of the *euphorbia* of the East-Indies.

FIG. 1. A specimen, with part of the furrowed side broken off, in order to shew the cylindric body, *b.* which runs under the *sulcus*, *a.* as noticed above.

It is proper to remark, that the tubercles, which ornament the surface of this fossil, vary considerably in shape and size, in different specimens: in that now before us, they are large and rounded, each placed in a kind of regular dish or hollow; in the specimen figured in plate 12, they are very small, and scarcely marked, but by the round pits or dents, which surround them. The tubercles are also terminated sometimes by a kind of short spine, as in Fig. 2; and hence, perhaps, in every specimen, these

PLATE 11, 12, 13, 14.

protuberances may be considered as the bases of so many spines, with which the recent subject was covered.

2. Another specimen in a different position. In this there are some slight longitudinal furrrows, *a. a. a.* not found in Fig. 1. I know not, if these will be thought sufficiently characteristic, to pronounce it a species distinct from the foregoing—It certainly differs materially from the above, in being thus furrowed; as well as in the form of the tubercles; but specimens are not unfrequently found, set with protuberances similar to those in Fig. 1, and with the same kind of regular furrows, that the back of this is marked with. *a.* the *sulcus*.

3. Another specimen with the sulcated side broken off; the figure two thirds less than the original.

FIG. 4, 5, 6.

Are fossil vegetables, nearly allied to the foregoing, but apparently of a different species. I have not, however, met with specimens sufficiently perfect, to lay down any regular characters, by which they may be discriminated.

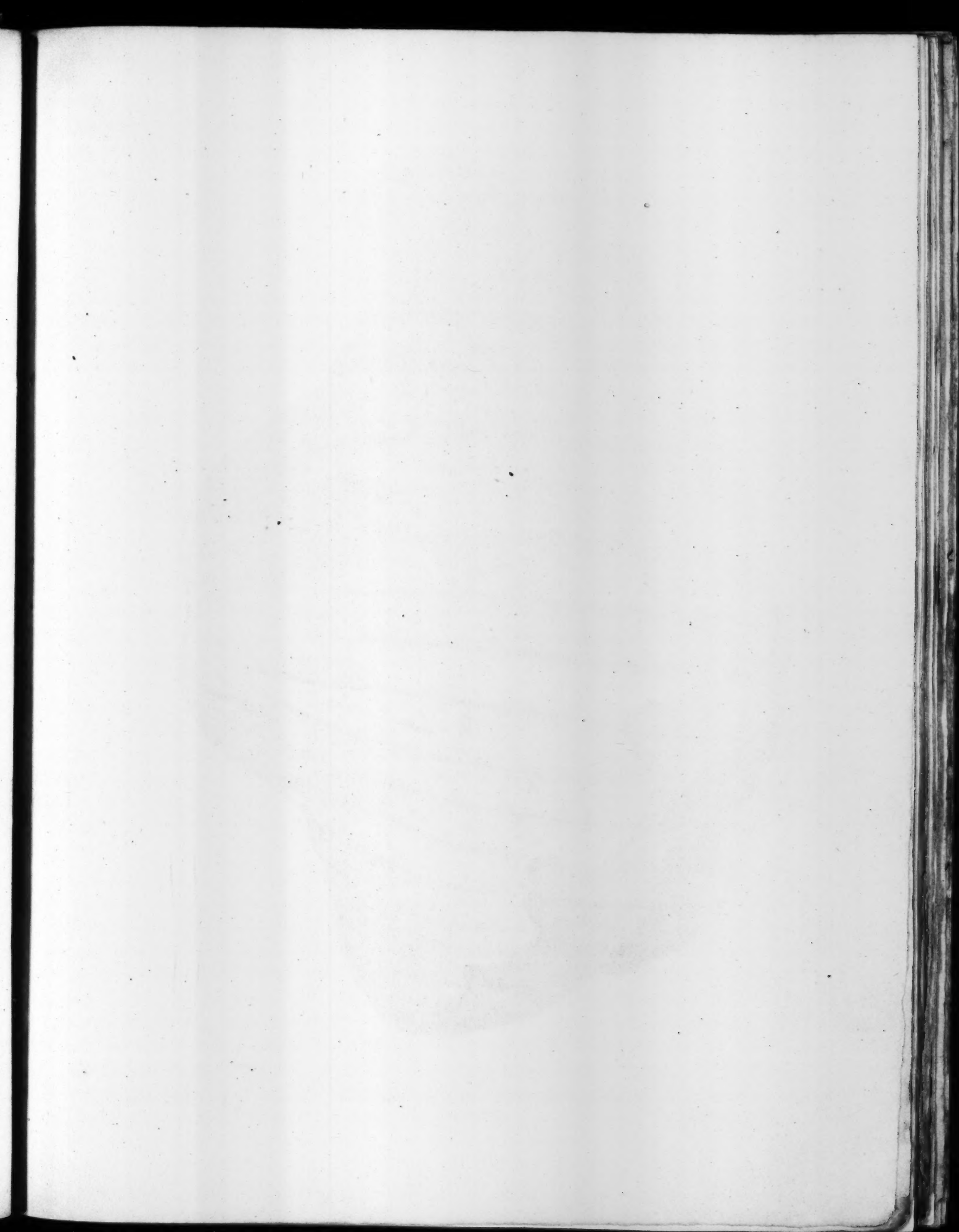
FIG. 4. In grit-stone, much compressed. This specimen was procured from the upper part of the quarry, in which the fossils 3, 4, 5, in plate 9, were found. When first got, the undulated lines, which cover the surface of the impression, and are somewhat prominent, were strongly marked, as delineated, by a film of black bituminous matter, frequent on vegetable petrifications: this, contrasted with the lighter colour of the stone, gave the

PLATE 11, 12, 13, 14.

fossil a very beautiful appearance. In a few days, the film peeled off, and left those parts, which it had covered, in the same state as the rest of the stone.

5. Half of an iron-stone nodule containing the impression of the stalk or stem of some unknown vegetable: This is thinly covered with a white, chalky kind of iron-ore, common in the cavities of nodulous iron-stone; and from the sides there springs a number of long, narrow leaves, with which the whole stem appears to have been surrounded. I have traced vestiges of a similar foliage in large blocks of stone, in which were immersed quantities of the *Lythoxylon*, figured in plate 11, 12. The leaves were a foot, or more, in length; very narrow, took their rise near the tubercles, and had their course marked by a blackness of the stone, in those parts.

6. Half of another iron-stone nodule, holding vegetable remains. The fragment, marked *a.* appears to be the top of a larger specimen of the fossil figured above; it is not compressed; but rises, in *basso rilievo*, above the flat of the nodule; it has a regular imbricated surface, so as to resemble, in some degree, a cone of the fir-tree. The figure *b.* is probably a very imperfect impression of the same kind as the foregoing.



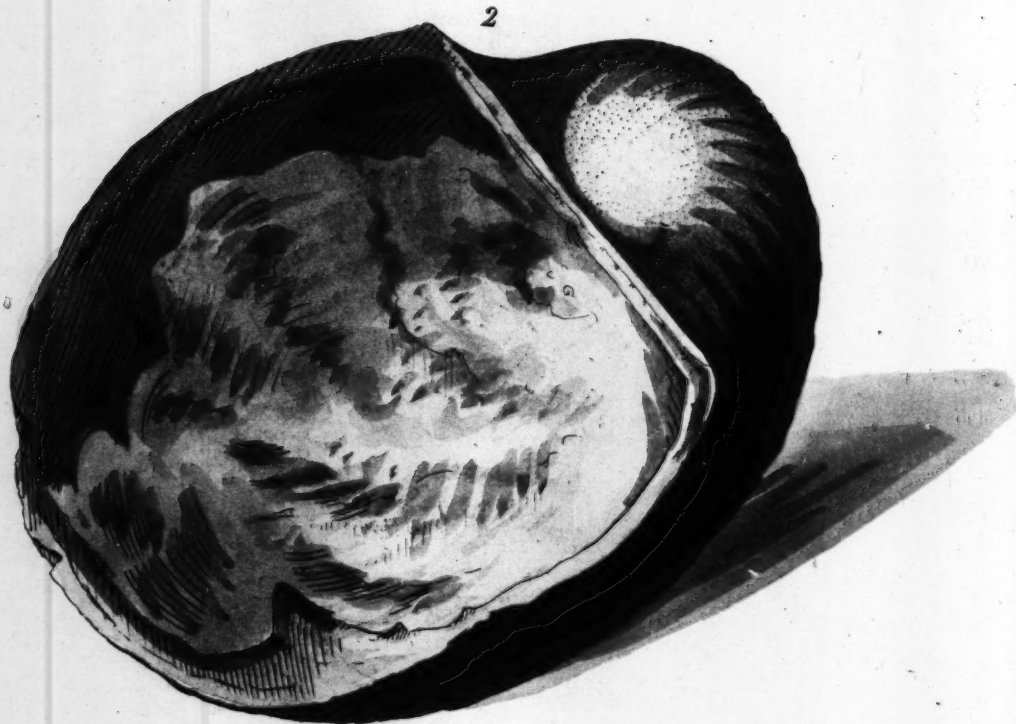
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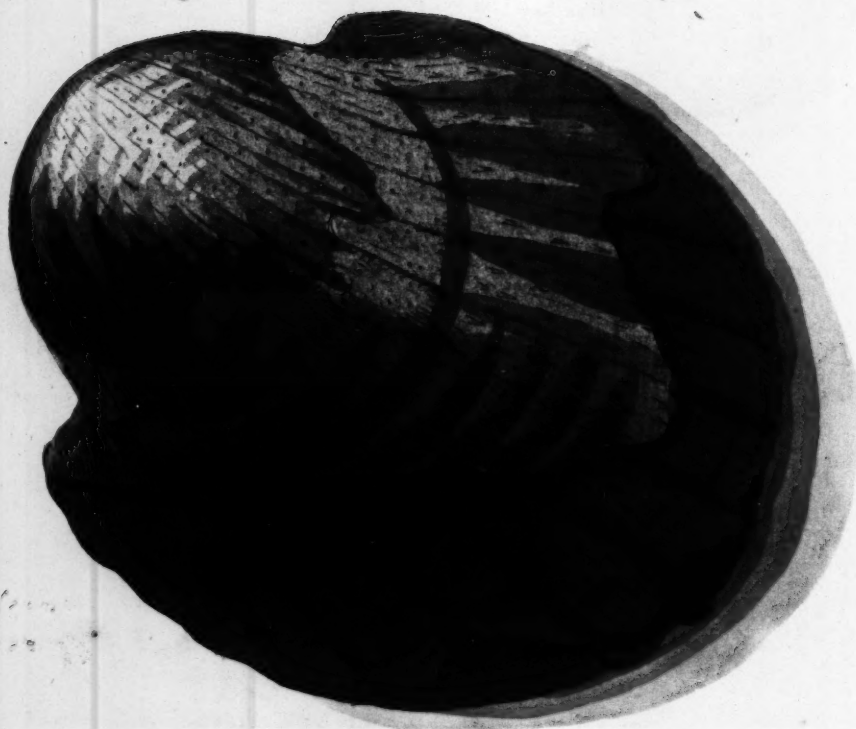
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*Etched from
Nature*

PLATE 15, 16.

SPECIMENS OF ANOMIÆ IN LIME-STONE.

FIG. 1.

CONCHYLIOLITHUS (*giganteus*) ANOMIÆ testa sulcata
scabra, lateribus dilatatis, cardine recto, valvula altera
convexo-gibbosa, nate incurvata, altera concava.

A fossil bivalve shell, belonging to the genus of *anomia*; furrowed longitudinally; the surface rough with small tubercles, which have somewhat the appearance of short depressed spines; the hinge straight, extending the whole breadth of the shell; the sides dilated, or prolonged so as to resemble wings; the larger valve gibbous, or bunched out; the beak thick, rounded, and curved over the hinge; the small valve concave.

This is a very large species: I have seen it near a foot in breadth, and eight or nine inches from the beak to the opposite extremity; its more usual size, however, is that of the figure. It seldom happens, that a specimen of this fossil is met with, in which the smaller valve is visible; that side generally being filled with a rude mass of stone, rarely to be removed without injuring the larger valve, which is commonly shattered and imperfect.

PLATE 15, 16.

FIG. 2, 3.

CONCHYLIO LITHUS (*crassus*) ANOMIÆ testa subrotunda sulcata, cardine recto, valvula altera convexa, nate gibba, altera plana.

Principally differs from the foregoing, in the sides not being dilated, and in the shortness of the beak of the larger valve, which is very thick and convex, but does not curve much over the hinge.

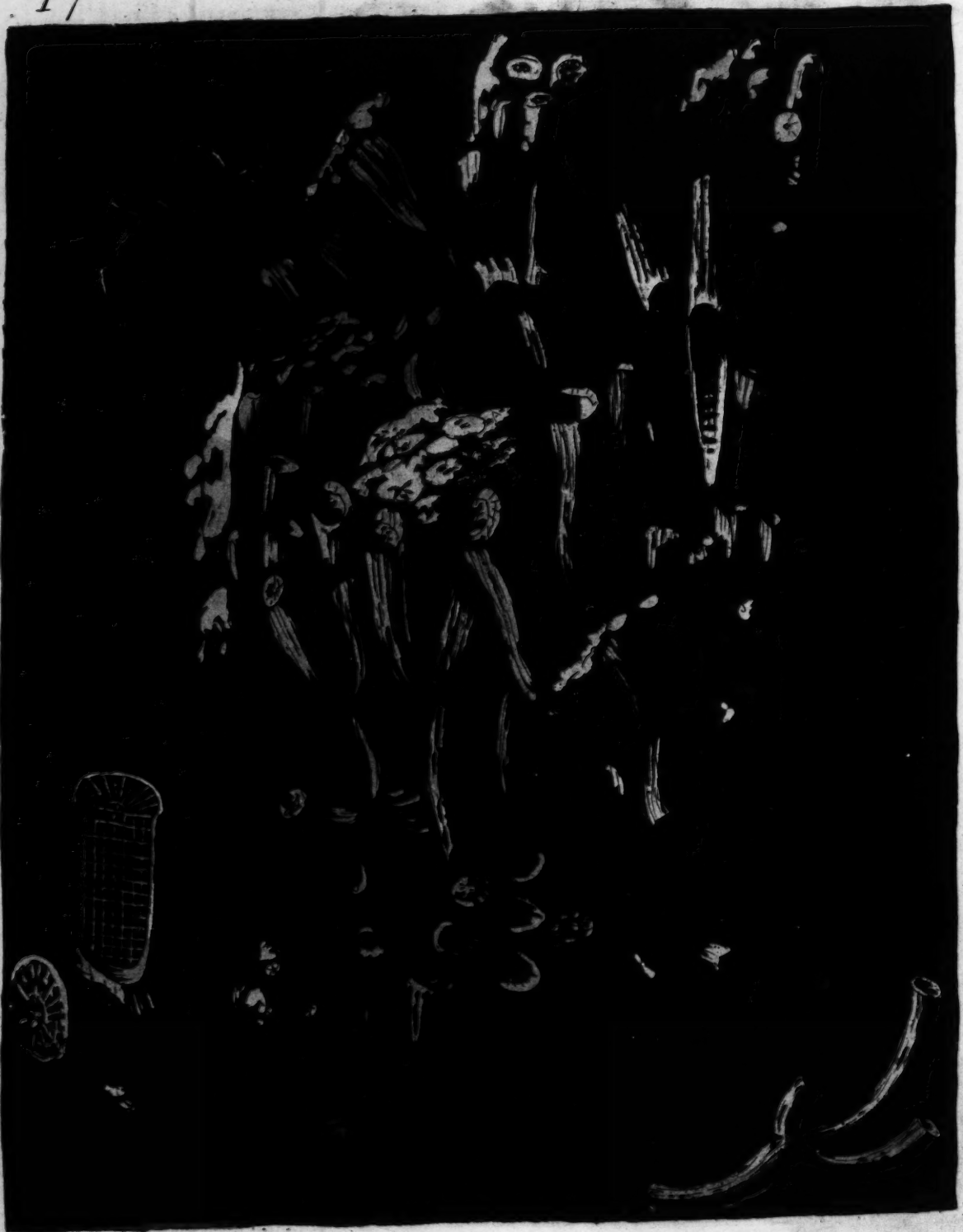
This is a large species, but seldom attains the size of the former: they are both common in those parts of Derbyshire where the lime-stone strata prevail—I found some very good specimens, a summer or two ago, about a quarter of a mile from Buxton, in the road leading to Fairfield, on the top of the hill called *Stone-bench*.

Fig. 2, Exhibits the inner side of the larger valve filled with stone. It is commonly found thus detached from the small valve, which I have never been able to trace, but in a few specimens; in these it appeared to be flat, or slightly concave, just filling the opening of the larger valve.

3. The same specimen, in a different position.

Number 14th Plates 17 to 22.

M. General Harwich



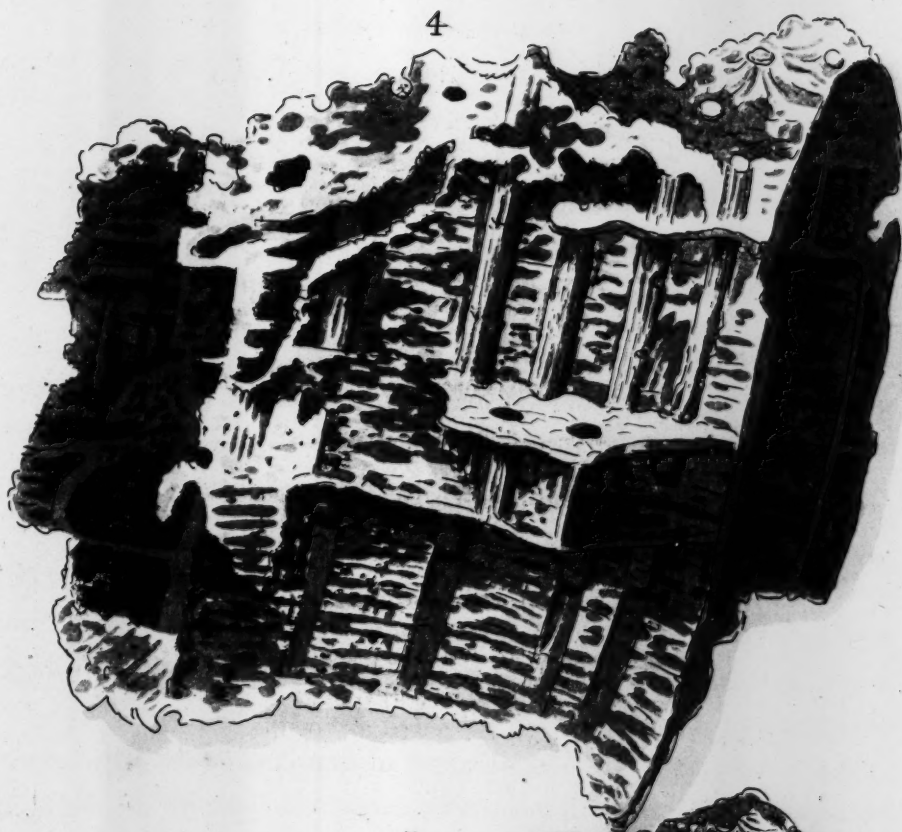


PLATE 17, 18.

CORALS IN CHERT AND LIMESTONE.

FIG. 1, 2, 3.

CORALLIOLITHUS (*Madrepore Cespitosæ*) MADREPORÆ
fascicularis coralliis teretibus subramosis striatis approxi-
matis, stellis concavis reticulatis.

Fossil coral, of the genus *Madrepora*, fasciculated; stems round, cylindrical, subramose, slightly striated in a longitudinal direction, and approximate—each branch terminated by a concave, reticulated *star*.

This fossil is not very rare: it is to be met with near Bakewell, Winster, Castleton, and most other places where the *Limestone strata* have been perforated—Frequently chert, its matrix limestone or spar—Hence, the best specimens of this, as well as of the other fossil corals, are generally found in the loose stone-walls, with which the land in some parts of Derbyshire is fenced. In such, or similar situations, where the limestone has been broken into small pieces, and exposed a long time to the action of the weather, the calcareous substance is gradually decomposed and washed away; while the chert, which generally constitutes the coral or other petrification, if the stone contain any, is either wholly detached, or remains prominent on that part of the matrix, which, from being less exposed, has escaped the effects of the sun and rain.

I have found some very perfect specimens of this kind between Sheldon and Ashford, in a wall on the right hand side of the

PLATE 17, 18.

road, near the Turnpike which is situated in the hollow, about half a mile from the first mentioned place.

I judge the original of this petrification to have been the *Madrepora cespitosa*, Linn. Syst. Nat. p. 3770, and as such have named it: I have collected specimens, however, which seem to agree better with the *Madrepora flexuosa* of the same author, though they do not appear to be specifically distinct from that which I have now figured—A drawing of them will be given in the course of the work.

FIG. 1. A large mass of limestone, with the coral adhering to its surface.

2. A branch detached from the same.

3. A specimen of a larger kind. The side of one of the branches ground down, in order to shew the internal reticulated structure, caused by the transverse and perpendicular plates, of which the inside of the coral consists. Perhaps not the same species as the above—appears to differ however in nothing but size.

FIG. 4, 5.

CORALLIOLITHUS (*Tubipora radiata*) TUBIPORÆ tubis
cylindricis fasciculatis combinatis: dissepimentis trans-
versis distantibus radiatis.

Fossil coral of the genus *Tubipora*; the tubes cylindrical, fasci-
culated, erect, parallel, striated, and connected by distant trans-

PLATE 17, 18.

verse plates or partitions, the surface of which is radiated from each tube as from a centre. The *striae* forming the radiations are close and numerous; they are deeply marked, and run from the tubes in waved lines, till they join those proceeding from the surrounding parts of the partition.

Rare: from Winster and some other places.

I have classed this coral as a *Tubipora*; in its external form however it very much resembles some of the recent *madreporæ*; (the *Madr. Organum* & *musicalis* for instance) though I have not been able to trace in the specimens, I have yet seen, the least appearance of that stellated structure, which characterises the genus in question. If the fossil has been found with such appearance by any Gentleman in Derbyshire, I shall esteem myself highly obliged in receiving intimation of it.

FIG. 4. A side view of a specimen of the above fossil in chert.

5. The same in a different position; shewing the upper transverse partition, which connects the tubes together. The whole surface of the specimen is beautifully powdered over with minute quartz crystals, scarcely expressible by a drawing; and in the interstices formed by the partitions, lie a number of loose, round, porous lumps, about the size of a nut, apparently possessing much of the nature of coral.—Is it not singular that these bodies have remained unchanged, while the substance, which originally surrounded them, has been wholly displaced by chert and quartz?

PLATE 17, 18.

It is proper to remark, that, in the specimen now under consideration, beside the transverse divisions already noticed, there are others, which run in the same direction as the tubes. It is evident, however, on inspection, that these made no part of the original body, but have been formed since its mutation, by a gradual deposition of siliceous matter, between the tubes, to the sides of which it adheres.



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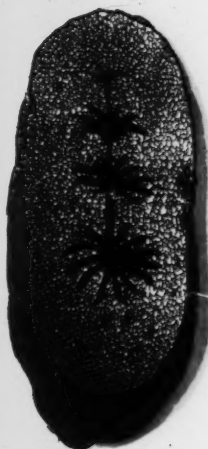
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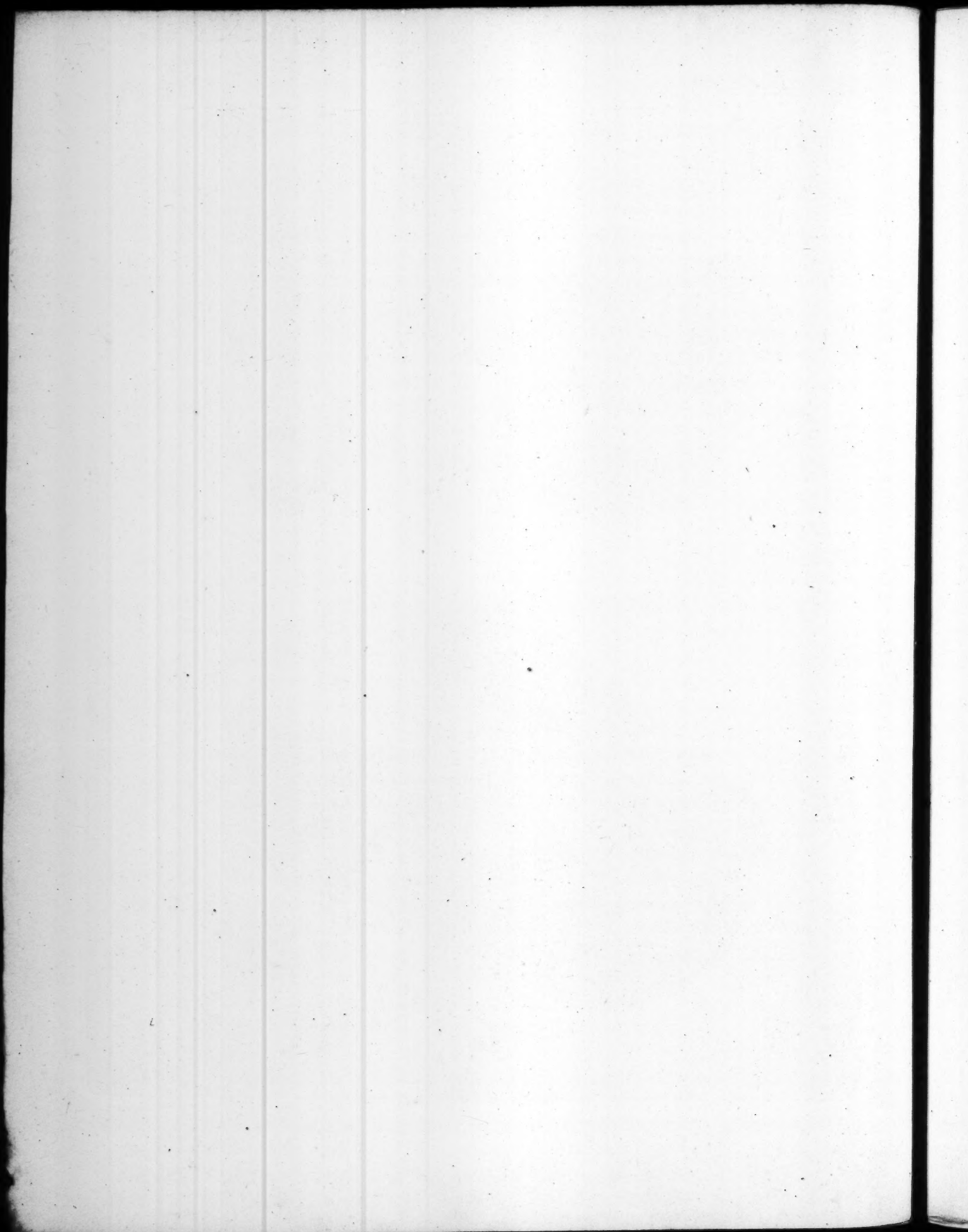


PLATE 19, 20.

FERN AND OTHER VEGETABLE REMAINS IN GRIT AND
IRON-STONE.

FIG. 1, 2, 3, 4.

LITHOPHYLLUM (*Osmundæ regalis*) FILICIS frondibus
bipinnatis: foliolis alternis: pinnis ovatis integerrimis
alternis.

A fossil leaf of fern, doubly winged; first wings alternate;
second wings, or little leaves egg-shaped, entire on the edges and
alternate.

Frequent near Chesterfield, Alfreton, &c. in Bind and Iron-
stone.

This has been described by most of the writers on extraneous
fossils; and, I believe, by all has been considered as a petrifica-
tion of the *Osmunda regalis*;—as such I have named it; though
it appears to differ in some respects from that plant—principally
in the shape of the little leaves, which are more regularly oval in
the fossil, and not so large as those in the recent subject, with
which I have compared it.

FIG. 1. Half a nodule of Iron-stone, holding a pretty per-
fect specimen of this fossil.

2. A smaller nodule, with an impression of one of the lateral
leaves.

3. A similar nodule; the impression somewhat differing in shape.

4

K

PLATE 19, 20.

4. Is a nodule with an impression, supposed, by collectors of fossils in general, to be specifically distinct from those in Fig. 1, 2, 3, but differs only in exhibiting the *under side* of the leaf. It is proper to remark, that Iron-stone nodules, including fern or other vegetable remains, usually divide so as to shew the upper surface of the leaf, which is generally somewhat prominent above the flat of the stone—Hence, that side of the nodule, holding such remains, is very improperly said to contain an *impression* of a plant, since it evidently exhibits the *Larvatum* of the plant itself.

5. Half of a small nodule of iron-stone, holding a grass or some other plant of a like form—Similar nodules are frequently met with, but the plants they contain are generally so small and imperfect, that it is almost impossible to fix any determinate character by which they may be discriminated.

FIG. 6, 7, 8.

LYTHOPHYLLUM (*stellatum*) plantæ * caule striato,
foliis verticillatis linearibus.

A *Lythophyllum*: stem slightly striated; leaves long, narrow, verticillated, or placed in distant circles round the stem.

This fossil is found now and then in Iron-stone, Coal, Bind, &c. with the other vegetable remains: It exhibits several different appearances, according to the size of the plant, and the direction the stone breaks, in which it is found. The original is

* Equiseti?

PLATE 19, 20.

thought by some writers on petrifications to have been a species of *Equisetum* or Horsetail—It certainly resembles that family in some respects; but there are other stellated plants, to which it might be referred, and perhaps with as much propriety.

FIG. 6. Part of an Iron-stone nodule, broken (in regard to its contents) in a transverse direction. Nodules, holding vegetable remains, similar to those expressed by the present drawing, have been called *petrified flowers* by many of the *collectors* of fossils in Derbyshire; they are, however, nothing more than the whorles or circles of leaves, belonging to plants of the same species (or at least one not to be discriminated in a fossil state) as those immersed in the nodules 7 and 8, differing only in size, and the direction they lie in the stone.

7. Half of a nodule, with a small specimen of the same species in a different direction.

8. Part of another nodule, holding the stem and leaves of a larger specimen of the same fossil plant.

PLATE 21.

A CURIOUS SPECIES OF NUT, IN GRIT AND IRON-STONE.

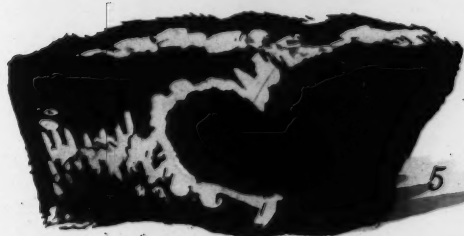
FIG. 1, 2, 3, 4, 5, 6, 7.

CARPOLITHUS (*nuceus*) cuspidato-ovatus, carinis tribus acutis longitudinalibus.

The *Nut* or *stony part* belonging to the fructification of some unknown fossil plant—Egg-shaped, one end sharp pointed, the other rounded and marked with a small, flat, circle, which appears to have been the base, or that part of the fruit by which it adhered to the plant; the sides are carinated with three, sharp, longitudinal ridges, proceeding from the base, and ending in the point at the opposite extremity.

Not very common in Derbyshire: it is met with in the grit and iron-stone, but never, as I have found, in any great quantity. It lies in various directions in the solid parts of the stone, generally surrounded by a thin, black, bituminous matter, which it is evident, was once the shell of the nut, and has served as a mould to the fossil—the fossil itself, when broken into, exhibits no other appearance than that of the surrounding stone. This petrification is frequent in some parts of Lancashire: at a grit stone-quarry near Wigan, about three years ago, I collected a considerable number of specimens, which in no respect differ from those found in Derbyshire. The quarry-men informed me, that they were sometimes at work for many weeks, without meeting with a single nut; but, if they once found a few, they seldom failed of procuring many more—frequently a hundred or two, in three or four feet of stone, if they took the trouble of breaking it, which

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PLATE 21.

was not always the case. I sent a number of these specimens to several of my Botanical friends, requesting their opinion of the plant, which might be supposed to have produced the original of this curious petrification; but I have not, as yet, gained any satisfactory information on the subject—In the quarry above mentioned, I was not able, after the strictest search, to discover the least vestage of any plant, that could lead to the knowledge required.

FIG. 1. A side-view of a specimen detached from the gritstone, in which it was found.

2. A full view of the pointed end of the same specimen.

3. A full view of the opposite extremity. These figures are about the size of the original: I have now and then, however, met with much larger specimens: one I procured in Lancashire, was near three inches long, and about two in diameter. Its shape the same as that of the smaller sort, excepting a slight angular elevation on each side, between the ridges; so that the surface was divided, as it were, into six equal parts—The smaller specimens are sometimes divided in the same manner.

4. A piece of fine gritstone, with a small specimen adhering to it.

5. A lump of coarser grit, one side broken away, so as to shew the nut, which lies in the centre.

PLATE 21.

6. A nodule of iron-stone holding another specimen of the same fossil. It is necessary to remark, that there are evident traces, in this nodule, of a husk or covering having once surrounded the nut. It seems to have been of a considerable thickness, and, as far as can be judged by the parts which are visible, nearly of the same shape as the nut itself. It was probably, however, of a much more perishable nature than the rest of the fruit; otherwise, it is reasonable to suppose, it would more frequently occur in the fossil state.

7. As the shape of the husk or coat can scarcely be ascertained by Fig. 6, I have added this drawing, which I think, would be nearly its form and size, were it possible to detach it, in a perfect state, from the surrounding stone.



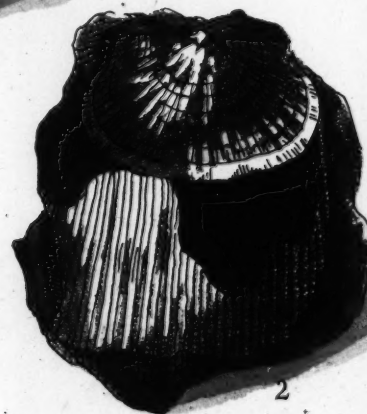


PLATE 22.

ANOMIÆ IN LIMESTONE.

FIG. 1, 2, 3.

CONCHYLIO LITHUS (*productus*) ANOMIÆ testa longitudinaliter striata, cardine recto, valvula altera producta cylindrico-convexa, altera brevi plana.

A fossil shell of the genus *Anomia*, striated in a longitudinal direction, and (in some specimens) set with a few, small, distant tubercles; the hinge on a straight line; the under or larger valve convex, the margin produced or lengthened out beyond the extent of the other valve, and in its general form approaching a cylindric figure; the beak small, curved over the hinge; the upper valve flat or slightly concave, very small, and hid, in the fossil state, by the cylindric part of the larger valve.

This curious *Anomia* is found in many parts of Derbyshire; some of the best specimens, I have seen, I collected in a mine near Croom-Hill, about four miles south of Buxton.

Its most striking characteristic is the produced cylindric figure of the larger valve—this is always filled with a hard stone, which entirely conceals from observation the smaller valve. If a specimen be struck, however, with a hammer or any other instrument, it constantly divides, *where the margin of the smaller valve rests against the inside of the produced cylindric part of the larger valve* (generally about an inch, or something less, from the top of the shell; see Fig. 1. *b.*) and the valve, before hidden, is then discovered, lying in the upper part of the larger division of the specimen, as delineated in Fig. 2.

FIG. 1. The most perfect form in which this petrification is got from the surrounding stone: *a. a. a.* a rude mass of lime-

PLATE 22.

stone, filling the inner part of the specimen: *b.* marks the line where the specimen divides. It is proper to observe, that not the slightest external appearance of a commissure can be discovered, on the most minute inspection, previous to the breaking of the specimen.

2. Another view of the same specimen, the top broken off.

3. An inside view of the top, as separated from Fig. 2.

Among more than fifty specimens of the above fossil which I have examined, I have not met with one that did not break as described; and that did not, when broken, exhibit the appearance delineated in Fig. 2 and 3. The outside of the specimens generally consists of a white friable substance, which appears to retain much of the nature of the original shell.

FIG. 4, 5.

CONCHYLIOLITHUS (*quiquelobatus*) ANOMIÆ testa subrotunda, valvulis convexis, longitudinaliter obsolete sulcatis, altera undulata, altera quiqueloba.

A fossil shell belonging to the genus *Anomia*; of a roundish shape; both valves convex, longitudinally sulcated; the *sulci* proceed but a small way from the margins (which are deeply indented) before they become obsolete; at the back of the larger or beaked valve, a deep, broad, groove or furrow, which gives a considerable wave to the margins; the other valve furnished with an angular projection, divided by the *sulci* into five, rounded, prominent ribs, which give the bottom of the valve, towards the margin, a quiquelobate appearance.

Frequent with the other *Anomia*, in lime-stone.

Fig 4 and 5. Two different views of the same specimen.

Bulinus triplatus Mozontianus

Bulime

1

2

3

4



Bulinus elongatus Mozontianus

5

6

7

8



Venus

9

10

Mytilus

11



Mytilus

13

14

12



Table 15. plate 8

*Fossil Shells
from the Environs of Mayence*

f.

Solarium plicatum

H. D. P. 8

*Trochile Shells from the
Environns of Paris*



Fig. 1.

S. spiratum -----



Fig. 2.



F. 1.

S. disjunctum



Fig. 5.



S. spatulum



Fig. 3.



F. 2.

S. ammonites



Fig. 5.



S. bipersonum



Fig. 6.



Fig. 7.



F. 4.

F. 5.



c

Nouvième P



Delphinula Calcar.

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Fossil Shells from the Environs of Paris

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Fig. 1.



a

D. Turboides—



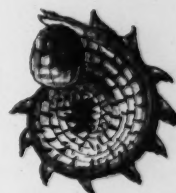
a

Fig. 2.



b

F. 1.



b

Turbo denticulatus

D. Conica



a

Fig. 3.



b



a

Fig. 4.



b

Delphinula Striata

D. Marginata



a

Fig. 5.



b



a

Fig. 6.



b

D. Canalifera

D. - Sulcata



a

Fig. 7.



a

Fig. 8.



b

F. 7.



b



Cyclostoma Mumia

C. turritellata

Scaloria decussata
Fig. 3



Fig. 1.



a

b



Fig. 2.



a

b



Scaloria denudata
Fig. 4.



a

b

Turritella fasciata

Fig. 6.



a

b

Scaloria crispata

Fig. 5.



a

b

Turritella imbricata

T. Sulcata.



Fig. 7.

a



Fig. 8.

a



b



Fig. 7.

b

Section 1

Section 2

Section 3



Section 4

Section 5

Section 6



Section 7

Section 8



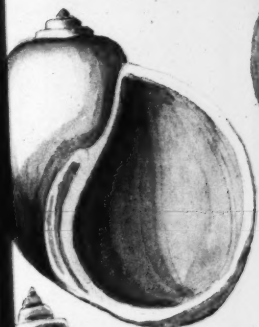
Section 9

Ampullaria Sigaretina

Fig 1

Ampullaria patula

2 2



Ampullaria depressa

Fig 3

Ampullaria acuminata

4



A. depressa



Ampullaria acuta

Fig 5

Ampullaria acuta

5

Ampullaria pygmaea

6



Ampullaria crassatina

Ampullaria crassatina

Ampullaria spirata

8



7



Plate 61 - Tome 8

Fossil Shells from the Environs of Paris Pl. 13



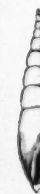
Bul



1/3



Bu



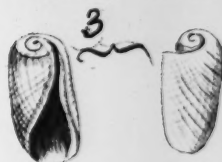
Turritella Subcarnata



Bulla Doulata



Bulla Striatella



T. Subcarnata

Fig 3



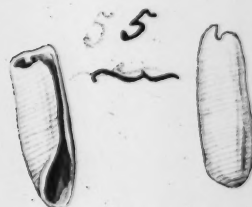
Bulla Coronata



Bulinus torbellatus



Bulla Cylindrica



Bulinus conulus



Bulinus nanus



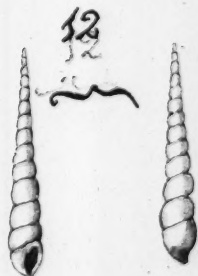
Bulinus Sextonius



Bulinus nitidus



Bulinus acicularis



Bulinus cyclostomus



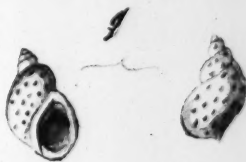
Fossil Shells from the Environs of Paris Pl. II.

Melania costellata

Fig 22.



Phasianella turbinoides



Melania corrugata

3



Melania marginata.



Melania nitida.



Melania lactea.



Auricula sulcata.



Auricula acicula.



Auricula ovata.



Auricula turbellata.



Auricula ringens



Volvaria bulboides.



Vol. 17. p. 331

Fossil Shells from Environs of Paris Pl. 12

